What is claimed is:

1. A method for the automatic aggregation of a plurality of virtual paths emanating from a first switch, comprising the steps of:

discovering, automatically, portions of the virtual paths that run parallel to one another;

constructing a first tunnel along parallel virtual paths between the first switch and a terminating switch; and

aggregating the parallel virtual paths into the first tunnel.

2. The method of claim 1, wherein the step of discovering further comprises the steps of:

selecting, at the first switch, an initial set of paths emanating from the first switch to a common second switch;

issuing an association signal at the first switch to the second switch, including a list of indices of the paths included in the initial set of paths;

propagating the association signal at the second switch and each of zero or more successive switches commonly traversed by the set of paths until at least a specified minimum number of paths diverge from the initial set of paths; and

identifying a remainder of the set of paths as a candidate set and a final switch reached as the terminating switch for the set of paths.

3. The method of claim 2, further comprising the steps of:

deleting indices corresponding to the diverged paths from the list of indices;

incrementing a forward hop count included in the association signal at each of the successive switches; and

initiating tunnel path construction upon a final value of the forward hop count at the terminating switch being above a specified minimum.

4. The method of claim 1, wherein the step of constructing the first tunnel further comprises the steps of:

allocating a path table entry for the first tunnel at the terminating switch;

composing, at the terminating switch, an aggregation signal including a final forward hop count and a list of path indices received in the aggregation signal, a list of outgoing path indices corresponding to the list of path indices, and a reverse hop count initialized to zero; and

propagating the aggregating signal in reverse through each preceding switch in succession until reaching the first switch.

5. The method of claim 4, further comprising the steps of:

incrementing the reverse hop count at each preceding switch to determine arrival at the first switch by comparing the reverse hop count with the final forward hop count;

performing, at each preceding switch, a reverse lookup of the list of indices received in the aggregation signal to identify corresponding incoming virtual paths;

replacing the list of indices received with a list corresponding list to the incoming virtual paths;

allocating, at each preceding switch, an additional path table entry for the first tunnel;

assigning the list of indices received, including the additional path table entry, as an outgoing index and the next preceding switch from which the aggregation signal was received as the next preceding switch for the additional path table entry;

replacing the list of indices received, including the additional path table entry, the list of indices received, including the additional path table entry; and

initiating aggregation of the candidate set of paths into the constructed tunnel upon arrival at the first switch.

6. The method of claim 1, wherein the step of aggregating the parallel virtual paths into the first tunnel further comprises the steps of:

allocating at the first switch a path table entry for the first tunnel and marking path table entries corresponding to a first list of indices received in the aggregation signal as redirected to an additional tunnel path;

replacing outgoing indices for marked entries with corresponding indices from a second list received in the aggregation signal;

composing an aggregation finalization signal, including the first list of indices, a received final forward hop count and a received reverse hop count; and

propagating the aggregation finalization signal through each successive switch to the terminating switch.

7. The method of claim 6, further comprising the steps of:

replacing a received list of indices at each successive switch with corresponding outgoing indices; and

discarding the path table entries identified by the received list of indices at each successive switch other than the terminating switch.

8. The method of claim 1, wherein the discovery, tunnel construction and aggregation are performed recursively treating the tunnels as candidates for further aggregation.

9. The method of claim 1, wherein the discovery, tunnel construction and aggregation are performed periodically, maintaining an overall degree of aggregation and table size reduction as the virtual path connections are closed and new virtual path connections are opened by end system applications.

10. The method of claim 1, wherein upon a network including a second tunnel at the terminating switch to which all virtual paths emerging from the first tunnel are redirected at the terminating switch, further comprising the step of concatenating the second tunnel to the first tunnel.

11. The method of claim 10, wherein the step of concatenating further comprises the steps of:

marking the first tunnel as redirected into the second tunnel; and

discarding path table entries for the emerging paths at the terminating switch.

12. The method of claim 1, further comprising the steps of:

saving a reverse hop count at each intermediate switch and the first switch as a measure of the length of a remaining portion of the first tunnel; and

merging at least two tunnels starting at the first switch by redirecting at least a second tunnel in a candidate set of paths to the first tunnel, upon determining the candidate set of paths to include tunnels of equal length according to the saved hop counts.

13. The method of claim 10, wherein a two-way connection is represented by pairs of virtual paths in opposite directions, further comprising the steps of:

allocating, at each intermediate switch, a second path table entry for a reverse tunnel;

initiating aggregation of reverse paths at the terminating switch by issuing a reverse finalization signal message including a list of indices for the reverse paths; and

propagating the reverse finalization signal back to the first switch.

14. The method of claim 1, further comprising the step of initiating a release signal, releasing aggregated paths from a tunnel path, upon determining that a switch issuing the release signal, a peer switch connected to the switch issuing the release signal by a tunnel released, and each intermediate switch have path table space to accommodate a plurality of component paths individually.

15. The method of claim 14, wherein the release signal includes an outgoing index for a tunnel path, a list of outgoing indices for a plurality of component paths, and an indication whether the first tunnel is to be discarded after the release.

16. A method for automatic release of aggregated paths from a tunnel path upon determining at a tunnel entry switch that each intermediate switch traversed by the tunnel path has path table space for accommodating each of the aggregated paths individually, comprising the steps of:

initiating at the tunnel entry switch a release signal including a list of outgoing indices of the virtual paths that are initially redirected to the tunnel path at the entry switch;

propagating the release signal successively to each switch along the tunnel path;

allocating at each of the successive switches a path table entry for each index listed in the release signal and setting the outgoing index and next switch for that entry with the listed index and the next switch on the tunnel path, respectively;

returning an acknowledgment signal to the preceding switch from which the release signal was received, the acknowledgment signal comprising the received list together with the list of indices of the allocated path table entries in the same order; and

replacing, at the preceding switch, the outgoing index for each path table entry identified by the first list in the received acknowledgment with the corresponding index from the second list in the acknowledgment signal.

17. The method of claim 16, further comprising the steps of:

including a discard indication flag in the release signal; and

deallocating the tunnel path table entry at each of the successive switches in the event that the discard indication flag is set.

18. A method for automatic release of aggregated paths from a tunnel path, upon determining at a tunnel exit switch that each intermediate switch traversed by the tunnel path has path table space to accommodate each of the aggregated paths individually; comprising the steps of:

initiating at the tunnel exit switch a reverse release signal comprising a list of incoming path indices for the virtual paths emerging from the tunnel;

propagating the reverse release signal successively to each preceding switch along the tunnel path; and

allocating at each of the preceding switches except the tunnel entry switch a path table entry for each index listed in the reverse release signal and setting the outgoing index and next switch for that entry with the listed index and the next switch on the tunnel path, respectively.

19. The method of claim 18, further comprising the steps of:

including an optional discard indication flag in the reverse release signal;

returning the discard indication flag in an acknowledgment signal to the next switch from which the reverse release signal was received; and

deallocating at the next switch the tunnel path table entry on receipt of this indication in the acknowledgment signal.

20. A switched network comprising:

a plurality of switches; and

a plurality of virtual path connections passing from a first switch through at least one intermediate switch and to a terminating switch, wherein at least one of the switches initiates automatic discovery and aggregation of parallel portions of the virtual paths into at least one tunnel.